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Hub agribusiness in the Center Italy: Simulation of the growth of a new "industrial cluster" through logistic functions

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Abstract

The province of Rieti has provided for the drafting of "master plan" able to harmonize local development goals with the financial opportunities of the programming period 2014-2020. Lazio Region through resolution number 1 of 2006 are driving the process of reorganization of industrial Agribusiness theorizing the start up of a single HUB between Lazio (Guidonia-CAR) and Abruzzo (Pescara -Agribusiness) in A24-A25 great communication route motorway. These guidelines are the fundamental components of the research group CNR_Riditt currently engaged in the management of the follow-up of this important program of the Ministry of Economic Development together with partners such as the FICEI.

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Keywords: Industrial clusters / Ficei / Agribusiness / Logictic function / Impact model

1. Introduction

The analysis of the activities planned by the municipality of Borgorose (RI) and the evolutionary dynamics expressed by the province of Rieti, pushed the working group CNR-RIDITT to define an integrated approach for the development of the area and the local economy, through a due diligence of the "master plan" made by CST (Consortium for Territorial Development) in order to harmonize the objectives with the national and Community financial opportunities, making compatible the creation of a macroeconomic model with strong national content in respect of specific territorial vocations. The preparation of the Regional Development Plan covering the period of community planning, has been characterized by a work methodology in stages, through which the strategic planning process focused first on identifying the problems of development in value and priority on description of the actions required to solve the problems, and then identify the resources compatible and define the modalities of cooperation

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between public and private instrumental to the implementation of the plan. The study of the current situation and actions already activated in the previous programming has highlighted the existence of experiences within the municipal administration that will reinforce a working procedure with "European cut." The scientific support of the research group confirmed this approach, through the application of a methodology that analyzes the territory in terms ex-ante and ex-post, identifying the strengths and weaknesses of the system (SWOT analysis), the risks and development opportunities generated by the formulation of strategic objectives and defines the possible impacts through a mathematical model characterized by the use of logistic functions and thus saturation of the population of firms potentially interested in the site location. The choice of a reference period compatible with Community Programming 2014-2020 (POR fesr), demonstrates the attempt to seek an overall consistency with the many economic policy instruments that exist today in order to maximize the community resources by careful financial engineering of the proposed development plan. Similarly, the attempt to impose a culture of internationalization compatible with the economic and environmental dimension expressed by the system of local resources, highlights the effort to improve the competitive position of the region through the strategic guidelines that generate added value euro-mediterranean as to maximize the factors of attractiveness, development and allocation of business. These guidelines are the fundamental components of the following plan of action, carried out through the involvement of different actors and all parties engaged in the development goals. The arrangements for cooperation between public and private and the subsequent territorial marketing actions thus represent a guarantee for the successful implementation of the macroeconomic model, with obvious reverberations occupational able to answer the question of development expressed by populations administered.

2. Agribusiness in central Italy: a system of local development which element catalyst of a new Hub between Lazio and Abruzzo

2.1 The system of local development – Borgorose (RI) Italy

The analysis on the current situation of the territory includes the study of the physical, natural, scenic, cultural and settlement of the territory in question through observation and description of its natural and man-made, proper physical aspects related to meteorological factors, geological, morphological, geomorphology and hydrology of the area analyzed, with particular attention to the resources that derive from them and to them belong. The analysis was conducted in order to identify the presence of a historical-artistic and witnesses in a conception of the landscape is not as simple "view", or just aesthetic, but as well the natural, historical and cultural heritage to defend, linked to culture of the people, the attendance and the enjoyment of the places. In addition, aspects of settlement refer to all the urban and socio-economic activities of the area (settlements, infrastructure, services and human activities in general) that characterize the uses (actual and planned) that man does the same territory, according to an overall interpretation of these elements, such as to define a particular anthropic system. Finally, the cultural aspects in a broad sense concern the large amount of historical, artistic present in a capillary in the territory of “Cicolano” such as historical centers, churches, palaces, archaeological sites, museums, castles, etc. The etymology of the word "Cicolano" originates in the name of Equicoli (Aequicolae), the population of Sabine origin, directly related to the Equi, and resident in these areas since pre-Roman times. The Equicoli were of "vigorous" and obstinate opponents of powerful Rome, as to be finally tamed, by the work of Publius Sempronius sofro, only in 304 AD Virgil in the Aeneid Book VII, describes the features of the people Equicolo, ascending than “Cicolano”:

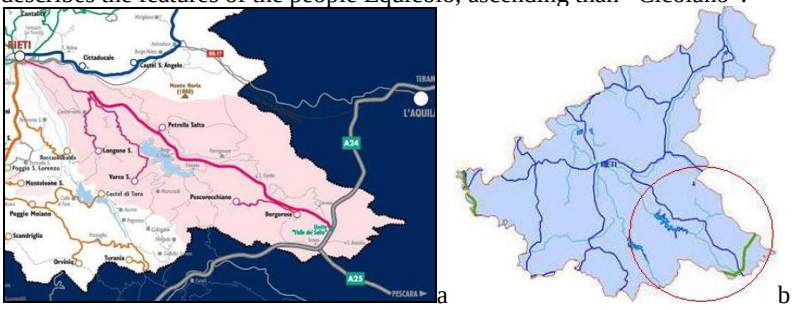


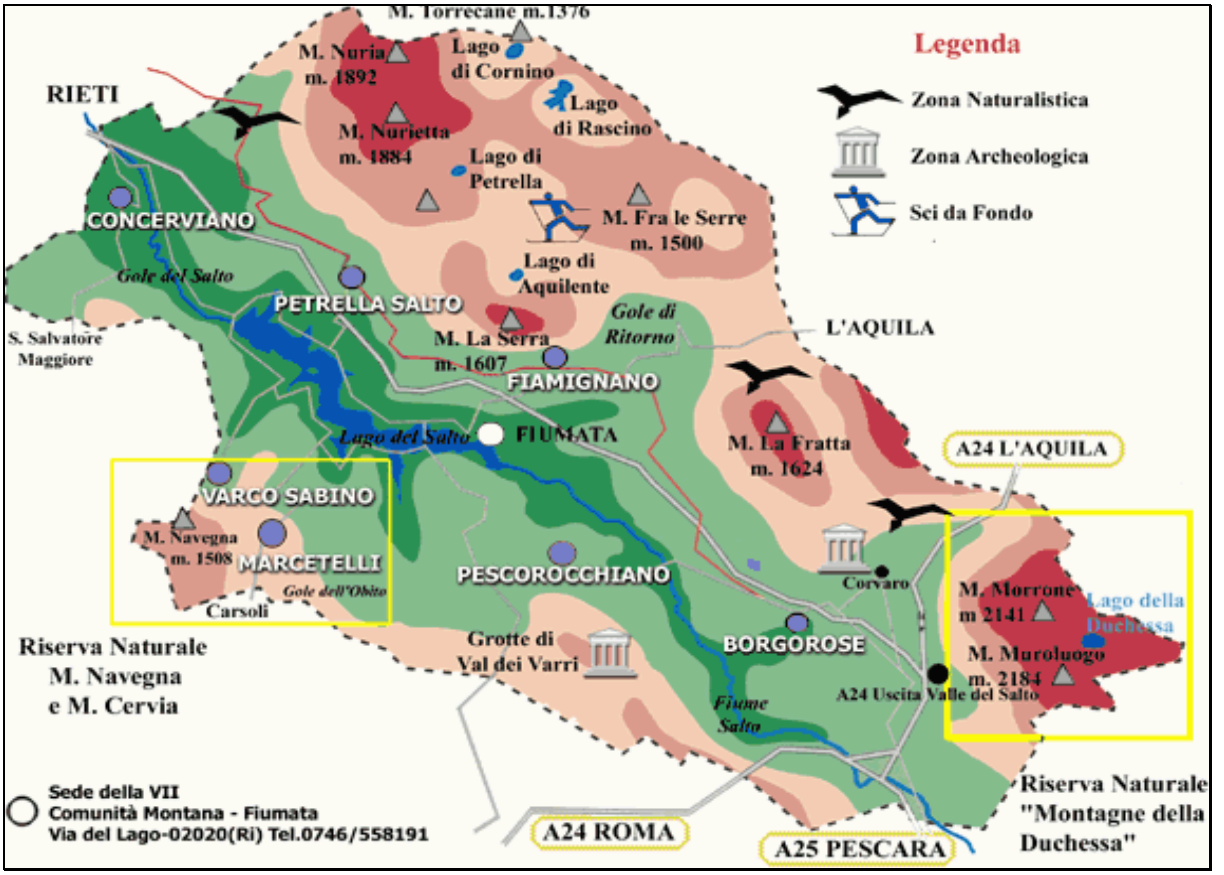
Fig. 1: (a) The great communication route motorway ; (b) Site location in the province of Rieti (Italy)

One of the problems caused by the globalization of the economy and the media of mass communication is undoubtedly the loss of "cultural identity". In the region of “Salto Cicolano”, in fact, we proceeded for a long time with a logic of cancellation and debasement of all that had taken on the connotation of "local", considered in itself not worthy of special attention, erasing in a few decades much of the "historical memory" stratified for centuries in local communities or attested by the entire complex of the sources preserved. Of course, in this area you are away from the cultural debate of much larger thickness that has developed in the Anglo-Saxon countries: the "local heritage", which has taken a leading role, protection and preservation, but also does not factor in the secondary development. Especially in the last thirty years there has been a continuous and lacerating contextualization of the local population, the deterioration of historic centers, popular traditions, the agricultural landscape and places of memory. The skills of this area occurred in recent years, the spread of literacy in the climate of a mass society, the imposition of new cultural models prefabricated, have determined the transition from tradition to modernity. Popular culture is not an ancient monument, for which protection means archaeological assistance and restoration, but it is a fact that I live affects the entire population of a territory. There is no memory scientifically established for "The legacy written, traditions and customs," local history and culture associated with the territory as: poems, songs, oral narrative. Moreover, there is no written statement to the different local dialects. The population of the “Salto Cicolano” does not know or does not recognize such as the true bearers of the oral tradition; This is a reality that no longer knows the transition from old to new generations fable, as occasions of storytelling have disappeared and many elderly (34% of the population is made up of seniors sixties) not even remember why not tell more. In this territory, by the changed social context, however, remain alive in the archive memory tales about robbers. The reason for the widespread use of this kind of oral narrative can be explained historically in the period from 1860 to 1867, during which there was the phenomenon of brigandage that saw the mass of the people particularly active in this area, undertaken not to criminalize the robbers , which set in the social structure in rural periods when they were not engaged in actions of brigandage. This is remarkable considering that the social context conditioned by historical events, has led to a conservative attitude to both the ruling class and for the lower classes, attitude remained unchanged over the course of time, with particular reference to the eighteenth, nineteenth, and twentieth . The period of banditry shocked, even if briefly, this indifference of the historical territory and perhaps why the stories of robbers still remain in popular memory. Few are the historical archives in the area and are essentially religious; much of the material that covers the local history such as the town of Fiamignano be filed with the State Archives of Rieti and L'Aquila

Fig. 2 : Wild life in the center of Italy

As for the material culture, or daily, there are different recipes (the delicious "spumette", the "tisichelle" and "pizza nfrasca"), the traditional foods of the area arising also from what was grown or cultivated , prepared primarily for family use domestic; some are used for feasts or festivals, such as the festival of lentil and pizza réntorta (a pie made with the only pastry, oil and pepper). There are demo-ethno-anthropological museums, which are a sort of archive memory; although the Salto Cicolano place of ancient streets of transhumance, the same no trace remains visible.

Fig. 3: Main indicators in the center of Italy



2. 2 Research methodology

As already studied, analyzed and presented in the cited work of M.A.Maggioni (Univ. Cattolica) and A.Q.Curzio (Univ. Cattolica; Accademia Lincei) e M.Fortis (Fond. Edison; Univ.Cattolica) from the title "*Complessità e Distretti Industriali*", Il Mulino (2002), there is a real ecology of industrial clusters strongly dependent on the expected profitability arising from the location in it; the profitability depends on the net benefits of localization (the difference between gross benefits and costs) based on elements observable. So the gross profits localization *Bfq* for an enterprise *f* located in the cluster *q* are the sum of geographical benefits *Gfq* and benefits of agglomeration *Afq*.

The benefits *Gfq* depend on the intrinsic characteristics of the geographic site (capital, labor, efficiency of suppliers, infrastructure):

$$Gfq\ (kq\ ,\ lq\ ,\ sq\ ,\ uq) \quad (1)$$

The benefits of agglomeration *Afq* depend on the number of businesses located (concave function, non-monotonic)

$$Afq\ (nq) \quad (2)$$

So the gross profits of localization initially increase because of economies of agglomeration and then decrease when the congestion more than compensates for economies of agglomeration

$$Bfq = Gfq\,(kq\,,\,lq\,,\,sq\,,\,uq) + Afq\,(nq) \quad (3)$$

Similarly, in a symmetrical way, localization costs *cfq* for an enterprise *f* located in the cluster *q* are the sum of geographical costs *gfq* and costs of agglomeration *afq*. The geographical costs *gfq* depend on the intrinsic characteristics of the geographic site (wages, interest rate, average price of services, tax rate)

$$gfq\,(wq\,,\,rq\,,\,dq\,,\,tq) \quad (4)$$

The costs of agglomeration *afq* depend on the number of businesses located (convex function, non-monotonic)

$$afq\,(nq) \quad (5)$$

So costs of localization initially decrease up to the point where it reaches an optimal number and then increased due to competition

$$cfq = gfq\,(wq\,,\,rq\,,\,dq\,,\,tq) + afq\,(nq) \quad (6)$$

The net benefits of localization are therefore: $Nfq = Bfq - cfq = Hfq\,(wq\,,\,rq\,,\,dq\,,\,tq\,,\,kq\,,\,lq\,,\,sq\,,\,uq) + hfq\,(nq)$ (7)

If you consider a time horizon over which the benefits and costs do not change over time, the geographical difference between a concave function and a convex function is always concave. So every trader who enters the cluster increases the profitability up to a certain threshold, after that point, every new entrant reduces the benefits available to both residents and new entrants. These considerations can be extended to the optimal size of spatial agglomerations of firms, households, etc. ..... there where the benefit functions are concave. So, if the number of firms entering is proportional to the average benefits of localization available in the cluster and the entry rate is proportional to the current level of net benefits of localization is expected that the growth is characterized by a path to a slow start with S (low benefits of locating) a middle period of explosive (high average net benefits) and a final part that stabilizes (balance):

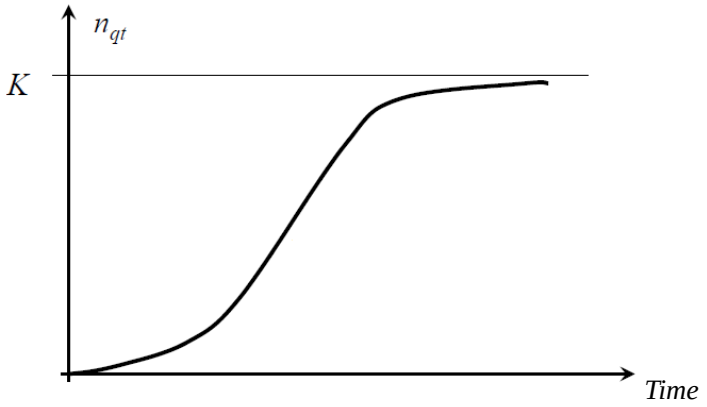


Fig. 4: Logistic function

The simplest model that describes the path to **S** is the logistic equation where *rq* is the intrinsic growth rate and *Kq* is the level of equilibrium.

$$\frac{dn_q}{dt} = r_q n_q(t)\left(1 - \frac{n_q(t)}{K_q}\right) \quad (8)$$

Integrating :

$$n_q(t) = \frac{K_q n_q(0) e^{r_q t}}{K_q + n_q(0)(e^{r_q t} - 1)} \quad (9)$$

The *rate of intrinsic growth rq* is often calculated as the difference between birth rates and mortality of a population. The same value can mean:

- a cluster in stationary growth with few entrants and almost no outgoing;
- a cluster disrupted with a high birth rate offset by a high rate of mortality

The level of equilibrium *Kq* represents instead the regional capacity, ie the maximum number of profitable companies that the cluster can sustain in isolation. It depends on the geographical benefits and the negative part of the benefits of agglomeration. In the long term, *Kq* may change as a result of the influx of skilled workers, new infrastructure, diffusion of innovations (technical, organizational, ...). In this model:

- the number of businesses located directly generates the level of benefits of localization
- the rate of entry is supposed to be proportional to the level of benefits of localization
- the number of businesses localized indirectly generates the localization of new businesses

The limits of the logistic model to a cluster are characterized by the fact that the choice for an enterprise is exclusively to enter or not into a cluster. However, there are more complex models that emphasize the interactions between clusters: for example, the logistic model to two or more clusters highlights the characteristics of competitiveness clusters for which it is always possible to find a point of balance being the derivatives of functions logistical always linear in nature. In the logistic model can be introduced other complexities that are found in biology, and can be applied to assess the economic effects (employment, income, revenue, etc ....) in diet of competition. For example, in the dynamic system of the larva of the pine, **Spruce budworm** said, every 40 years or so we are witnessing an *explosion* in population resulting in devastation of the pine trees present. Once consumed almost completely the resources of the forest, the larvae come back to a level of *refuge*, giving the impression of *disappearing* from the forest. The system is well described by the differential equation:

$$\frac{\mathrm{d}N}{\mathrm{d}t} = rN\left(1 - \frac{N}{K}\right) - \frac{N^2}{1+N^2} \quad (10)$$

Fig. 5: The point of equilibrium

where N is the population, r their growth rate and K the *carrying capacity*, or rather the resources of the environment. So when considering constant the environmental resources, we can estimate the economic effects of the increment of population under the liberalized system through a model that, in the absence of predators, follows logistic equation plus a negative term of predation $P(N)$ due to the presence of the competitors themselves. To calculate the other possible fixed points we can study the intersections of the two parts of the model or finding the points for which the following applies:

$$r\left(1 - \frac{\mu}{K}\right) = \frac{\mu}{1+\mu^2} \quad (11)$$

In the expression above the first member is the growth of *per capita* of the dimensionless variable μ with respect to time τ, while the second member is the death rate *per capita* caused by predation, always referred to the variables dimensionless. As the number of resources is almost constant, it is considered K as a constant and you see how it changes the model to changes in the value of the parameter r. In particular, it starts from a r small and it shows what happens causing increase. Besides the already given μ_0 the equilibrium points derivable from the equation above, the points of intersection of the two curves, generally vary in number from 1 to 3. In fact there are two different bifurcations of the types of saddle-node in which we witness the appearance / disappearance of fixed points, while for **low values of** r there is only one intersection $\mu-$ that the geometric study of the diagram shows to be **stable**. This equilibrium point, though moving itself to the right, remains relatively close to the origin. Biologically, the population increases but the number of individuals is always low. For this reason, the point $\mu-$ is said **refuge**.

For which increasing of r are reached new critical values in which they appear new equilibrium points **semistable** (unstable to the left and stable to right or vice versa).

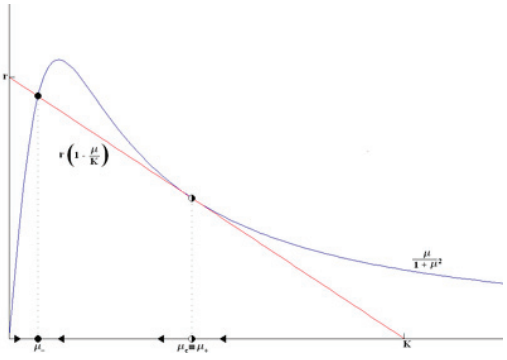


Fig. 6 : Two points of equilibrium

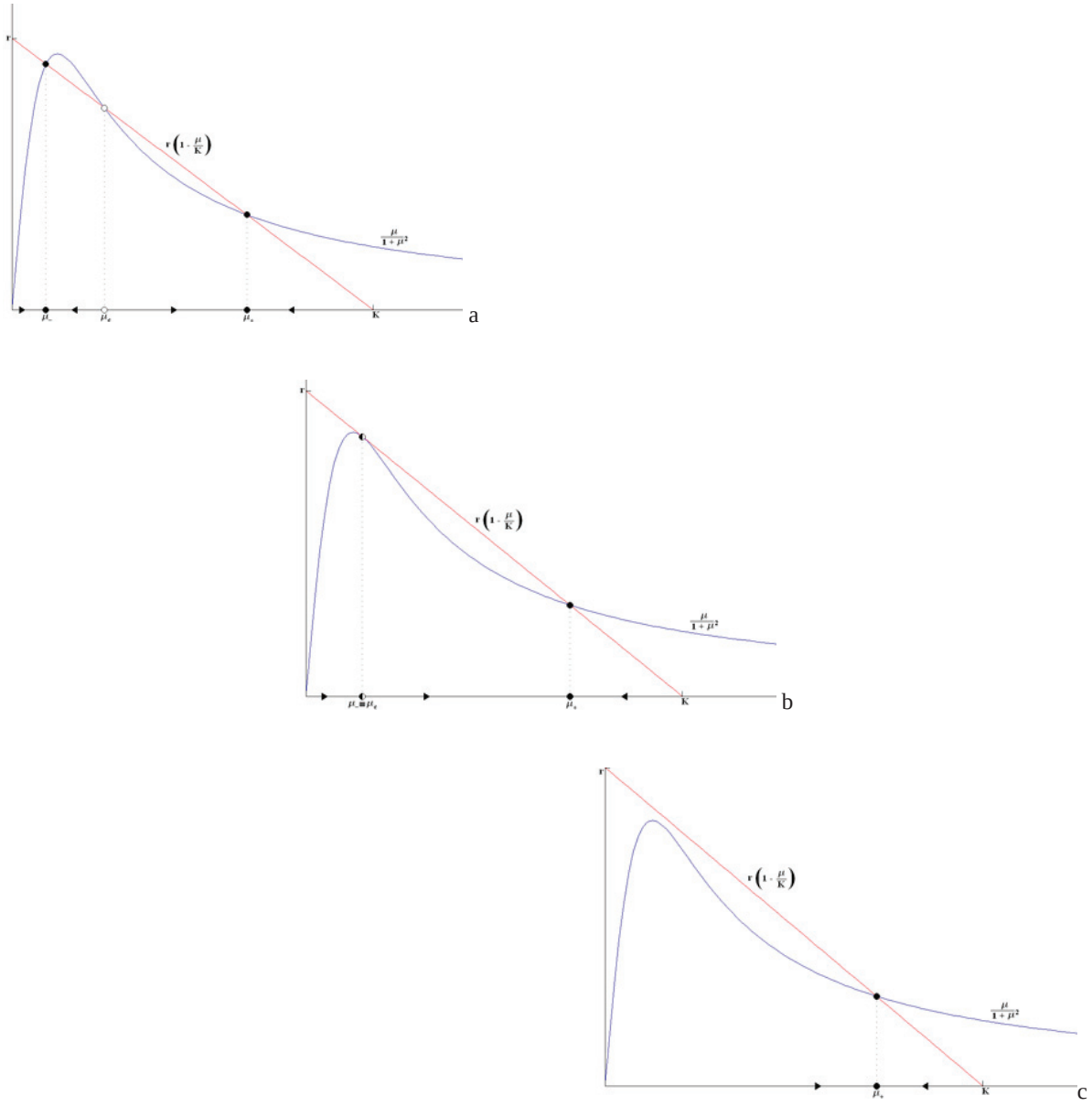


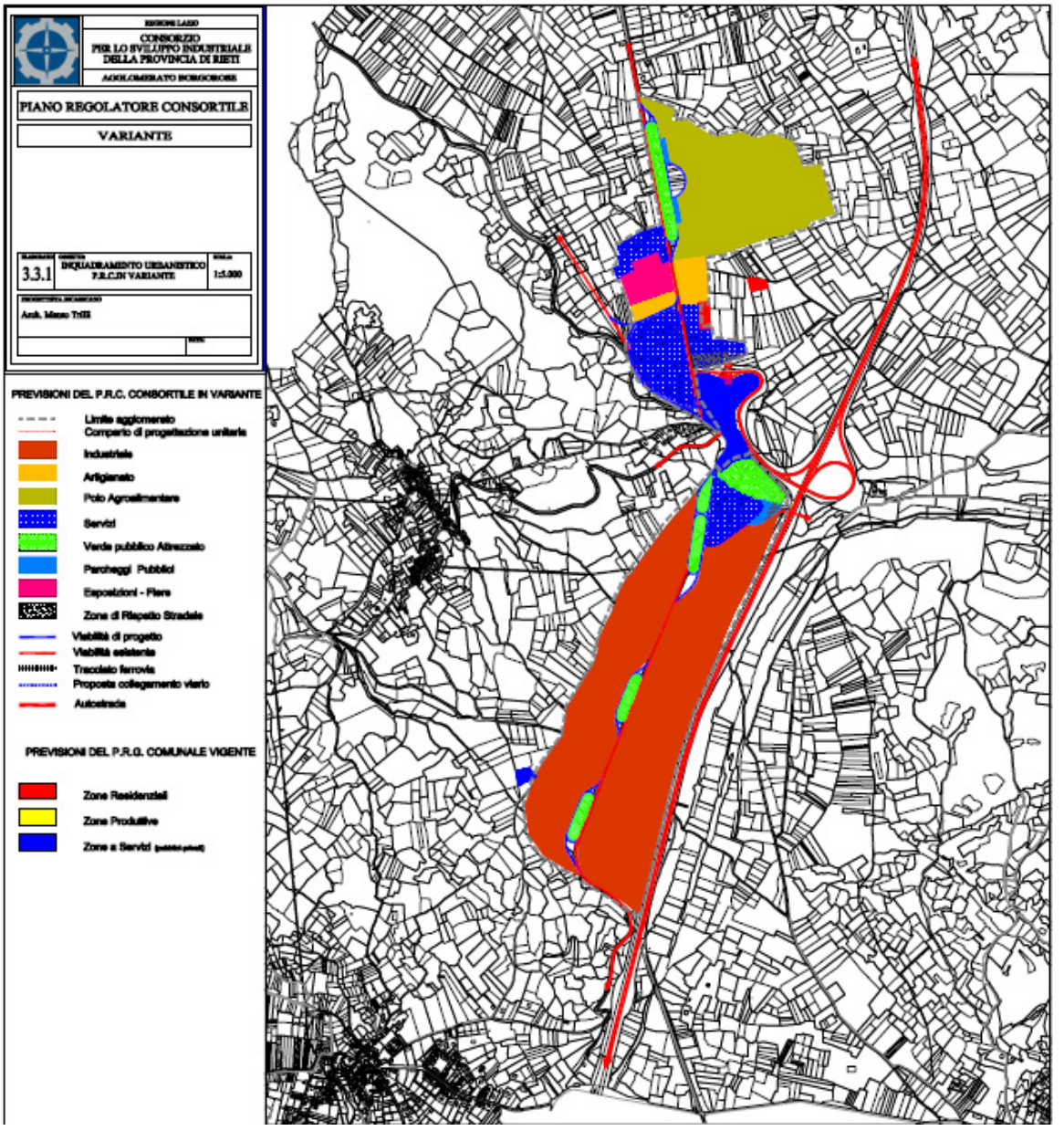
Fig. 7: (a) Three points of equilibrium; (b) Two points of equilibrium; (c) One point of equilibrium

At this point, since the population and the consumption of resource is much higher than before, we can no longer consider K constant because the same resources decrease dramatically, and although the parameter r remains

unchanged, with the decrease of the K, the straight line crosses the curve again of "predation" by resurface the point of refuge and giving again begin to the cycle.

INDUSTRIAL AREA OF BORGOROSE (RI) - ITALY

Fig. 8: SCHEME OF VARIATION PRG INDUSTRIAL CONSORTIUM



2.3 The central role of 'innovation as a factor enabling systems agro-food

The action of local marketing needed to attract investment in the hypothesized master plan attached to the PRG variant of the consortium for the industrial development of the province of Rieti requires, of course, of synergistic actions between public and private operators through the provision of a package of conveniences in order to facilitate the allocation of business. The following are the main items belonging to the "Convenience Package" of the project, ie those items that, through careful analysis, are the strengths of the same and help mitigate various costs and structure.

Table 1: The main items for site location

"Convenience Package"
Low cost of land
Contributions start-up of the industrial Consortium of Rieti
Proximity to the motorway and to the node directional Torano A24-A25
Contributions of the Regional Law 01/06 – POR fesr 2014-2020
Interventions on overheads by the industrial consortium

The data were processed to obtain the estimates and forecasts of the Polo Agro-food Borgorose, are those relating to the budgets of the member companies of the Industrial Union of the Province of Bergamo. The choice fell on the territory of Brescia, which similarities to socio-economic and environmental, is comparable with that of the province of Rieti and more particularly with the area regarding the allocation of the Hub agribusiness. The source of this information was the database CERVED, the body responsible for collecting electronic financial statements of all companies registered with the Chambers of Commerce. It is reported in addition to the aggregated balance sheet total, in addition to the calculation of some indices considered particularly significant for the different aspects of business management (productivity, profitability, liquidity, capital structure, cost ratio, etc.). The type of companies provided are three, and have been classified according to the size of the lots available within the area. In detail, the classification includes:

• Company of "Type A": which provides employment for a lot of 1,500 square meters and a production of wines and liquors derived;

• Company of "Type B": which provides employment for a lot of 3000 square meters and a production of water and drinks;

• Company of "Type C": which provides employment for a lot of 6,000 square meters and a production of pasta and the like.

Table 2: Balance sheet relativized by sector

Balance Sheet (*) - Food & Drink

	Food	Food (millers, pasta and the like)	Food (wines, spirits and derivatives)	Food (hydrothermal waters and drinks)
Amplitude classes	16	7	1	5
Active:	100,0	100,0	100,0	100,0
Fixed assets:	34,0	38,8	14,2	61,8
Intangible assets	3,2	1,0	1,9	0,4
Material assets	27,8	30,1	9,8	50,6
Financial assets	3,0	7,7	2,5	10,8
Circulating	63,8	52,5	79,7	37,9
Inventories:	18,8	7,5	25,9	8,4
Raw and auxiliary materials	12,0	4,6	25,9	7,1
finished and finished products	6,8	2,9	0,0	1,3
Credits:	41,9	42,3	51,6	24,8
short term	41,7	28,6	51,5	24,6
medium-long term	0,2	3,7	0,1	0,2
Financial assets	0,2	0,0	0,0	1,1
Liquid assets	2,9	2,7	2,2	3,6
Prepayments and accrued income	2,2	8,7	6,1	0,3
Passive :	100,0	100,0	100,0	100,0
Shareholders' equity	15,7	23,8	3,9	49,5
Social capital	8,0	11,5	4,0	25,3
Funds and	1,2	2,0	0,0	2,6
Profit for the year	6,5	10,3	-0,1	21,6
Funds for risks and charges	2,3	0,5	12,9	0,2
T.F.R.	3,7	5,7	2,4	6,2
Debts:	77,3	69,4	80,5	43,6
short term	64,3	51,8	78,5	31,5
medium-long term	13,0	17,6	2,0	12,1
Accrued expenses and deferred income	1,0	0,6	0,3	0,5

(*) Values expressed as a% of total assets

Source: Industrial Union of the Province of Bergamo – 2004

Table 3: Income statement relativized by sector

Income Statement (*) - Food & Drink

	Food	Food (millers, pasta and the like)	Food (wines, spirits and derivatives)	Food (hydrotherm al waters and drinks)
Amplitude classes	16	7	1	5
Production value:	100,0	100,0	100,0	100,0
Revenues from sales	99,3	96,5	98,9	90,3
other revenues	0,7	2,8	0,1	9,5
changes in inventories	0,0	0,7	1,0	0,2
Production costs :	98,2	93,2	98,3	93,8
Cost of materials	67,6	52,8	65,0	39,3
Overheads	15,3	21,6	25,1	26,5
Added value	**17,1**	**25,6**	**9,9**	**34,2**
staff:	10,4	12,9	6,2	17,5
Wages, salaries and corporate expenses	9,8	12,2	5,9	16,5
T.F.R.	0,6	0,7	0,3	1,0
Depreciation and amortization:	3,9	5,1	1,7	8,1
amortization of intangible assets	0,9	0,4	0,8	0,3
amortization of material assets	2,8	4,6	0,8	7,7
amortization of financial assets	0,2	0,1	0,1	0,1
Provisions for risks and charges	0,1	0,1	0,0	0,1
EBIT	2,7	7,5	2,0	8,5
financial management:	-1,8	-1,2	-0,9	-0,4
financial income	0,1	0,1	0,4	1,1
financial charges	1,9	1,3	1,3	1,5
Rectification activities	-0,1	0,0	0,0	-1,5
Extraordinary income and expenses	1,0	2,3	-0,1	-0,8
Profit before taxes	1,8	8,6	1,0	5,8
Tax Statements	1,1	3,1	0,7	2,3
Profit / loss for the year	0,7	5,5	0,3	3,5
Cash flow	4,7	10,7	2,0	11,7

(*) Values expressed as a% of total assets

Source: Industrial Union of the Province of Bergamo - 2004

Table 4: performance indicators by sector

Financial ratios - Food & Drink				
	Food	**Food (millers, pasta and the like)**	**Food (wines, spirits and derivatives)**	**Food (hydrothermal waters and drinks)**
Amplitude classes	16	7	1	5
Profitability:				
R.O.E	-0,12	0,37	0,2	0,08
R.O.I.	0,03	0,1	0,04	0,05
EBIT/Sales	0,07	0,14	0,04	0,18
EBIT./Total asset	0,09	0,19	0,08	0,13
V.A./Sales	0,17	0,27	0,1	0,38
R.O.S.	0,02	0,07	0,02	0,07
Financial structure				
Coverage of fixed assets	0,58	0,69	0,28	0,87
Equity / Third-party funding	0,23	0,52	0,05	1,52
Capitalisation	0,16	0,24	0,04	0,5
liquidity:				
current liquidity	1,06	1,06	1,02	1,38
acid liquidity	0,74	0,91	0,69	1,09
Cash flow/EBIT.	0,4	1,39	0,09	0,7
Effect of costs:				
Raw materials / costs	0,69	0,56	0,66	0,42
Personal / Costs	0,11	0,14	0,06	0,19
Amortization./Costs	0,04	0,06	0,02	0,09
Amortization./Assets	0,19	0,18	0,27	0,14
Financial charges / EBIT	0,21	0,18	0,36	0,09
Assets./Total assets	0,34	0,39	0,14	0,62
Medium- to long-term / Total liabilities	0,13	0,18	0,02	0,12

Source: Industrial Union of the Province of Bergamo – 2004

Company of "Type A"

Table 5: Input data for construction of the financial statements in company of type A_Business Plan (value in €)

Profit and Loss Account (A)					
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Sales revenues	1.400.000	1.550.000	1.750.000	2.000.000	2.200.000
Change in inventories of products	35.000	5.688	-8.604	4.583	3.667
Total product of exercise	**1.435.000**	**1.555.688**	**1.741.396**	**2.004.583**	**2.203.667**
Purchase materials	882.292	935.920	1.043.068	1.205.517	1.324.326
Change in inventories of materials	-7.292	-503	-890	-1.350	-993
Direct service costs	0	46.771	104.218	120.417	132.333
Total gross profit	**560.000**	**573.500**	**595.000**	**680.000**	**748.000**
Wages and salaries	162.860	195.432	228.004	260.576	325.720
Other overheads	40.000	50.000	60.000	80.000	90.000
Amortization	312.000	274.600	269.680	265.744	247.595
EBIT	**45.140**	**53.468**	**37.316**	**73.680**	**84.685**
interest income	3.198	4.403	7.429	7.738	8.572
Interest expense on short-term debt	0	0	0	0	0
Interest expense on long-term debt	34.675	30.550	34.500	37.700	35.150
Income tax	4.509	9.016	3.381	14.427	19.175
Profit for the year	**9.154**	**18.305**	**6.864**	**29.291**	**38.932**

Company of "Type B"

Table 6: Input data for construction of the financial statements in company of type B_Business Plan (value in €)

Profit and Loss Account (B)					
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Sales revenues	2.700.000	3.100.000	3.500.000	3.900.000	4.300.000
Change in inventories of products	67.500	13.875	14.875	11.000	11.000
Total product of exercise	**2.767.500**	**3.113.875**	**3.514.875**	**3.911.000**	**4.311.000**
Purchase materials	1.701.563	1.874.762	2.115.525	2.351.971	2.592.000
Change in inventories of materials	-14.063	-1.548	-2.003	-1.971	-2.000
Direct service costs	0	93.661	211.352	235.000	259.000
Total gross profit	**1.080.000**	**1.147.000**	**1.190.000**	**1.326.000**	**1.462.000**
Wages and salaries	304.497	304.497	372.163	405.996	473.662
Other overheads	90.000	90.000	100.000	100.000	120.000
Amortization	644.000	595.200	596.160	596.928	567.542
EBIT	**41.503**	**157.303**	**121.677**	**223.076**	**300.796**
interest income	11.455	9.154	10.304	11.517	15.462
Interest expense on short-term debt	0	0	0	0	0
Interest expense on long-term debt	34.675	65.883	63.948	66.513	68.078
Income tax	0	33.828	21.605	54.950	82.538
Profit for the year	**-12.924**	**68.681**	**43.864**	**111.565**	**167.577**

Company of "Type C"

Table 7: Input data for construction of the financial statements in company of type C_Business Plan (value in €)

Profit and Loss Account (C)					
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Sales revenues	4.800.000	5.300.000	5.800.000	6.300.000	6.800.000
Change in inventories of products	120.000	19.125	20.375	13.750	13.750
Total product of exercise	**4.920.000**	**5.319.125**	**5.820.375**	**6.313.750**	**6.813.750**
Purchase materials	3.066.667	3.202.619	3.505.196	3.799.033	4.099.167
Change in inventories of materials	-66.667	-4.405	-6.674	-6.533	-6.667
Direct service costs	0	159.911	349.852	379.250	409.250
Total gross profit	**1.920.000**	**1.961.000**	**1.972.000**	**2.142.000**	**2.312.000**
Wages and salaries	405.996	439.829	473.662	507.495	541.328
Other overheads	110.000	110.000	130.000	150.000	180.000
Amortization	1.230.000	1.094.000	1.035.200	988.160	910.528
EBIT	**174.004**	**317.171**	**333.138**	**496.345**	**680.144**
interest income	20.787	20.339	30.551	34.239	37.172
Interest expense on short-term debt	0	0	0	0	0
Interest expense on long-term debt	34.675	123.500	116.750	115.625	113.250
Income tax	23.526	72.851	81.861	137.720	202.600
Profit for the year	**47.765**	**147.909**	**166.203**	**279.614**	**411.340**

Table 8: Total investments inside the master plan

Tyipology A					
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Global revenue	7.000.000	20.150.000	35.000.000	48.000.000	55.000.000
Investments for year	8.465.000	13.544.000	13.101.000	10.022.000	6.693.000
Total investments	8.465.000	22.000.000	35.101.000	45.123.000	51.816.000
Typology B					
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Global revenue	8.100.000	18.600.000	31.500.000	42.900.000	51.600.000
Investments for year	10.161.000	10.761.000	12.571.000	10.974.000	9.187.000
Total investments	10.161.000	20.922.000	33.493.000	44.467.000	53.654.000
Typology C					
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Global revenue	9.600.000	15.900.000	29.000.000	37.800.000	40.800.000
Investments for year	13.000.000	7.100.000	14.900.000	9.500.000	4.300.000
Total investments	13.000.000	20.100.000	35.000.000	44.500.000	48.800.000

The prediction made regarding the possible impact on the provincial GDP of companies in the Polo Agribusiness, is shown in the table below In the follow up territorial shown below were then highlighted all the data related to estimates of performance results that the individual types of business could generate settled on the local economy of Borgorose (RI) - Italy

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3. Conclusion

Assuming that the number of companies settled grow gradually over the years through a logistic function (the figure for the number of companies is cumulative), up to the total of 43 companies provided by the fifth year of the Polo Agribusiness, the value of investments per year, total investments and turnover (GDP) generated by the local economy is as follows:

Table 9: Impact of master plan on GDP

Impact on GDP of all the three types of companies					
	Year 1	Year 2	Year 3	Year 4	Year 5
Typology A	0,22	0,63	1,09	1,50	1,72
Typology B	0,25	0,58	0,98	1,34	1,61
Typology C	0,30	0,50	0,91	1,18	1,28
Total	0,77	1,71	2,98	4,02	4,61

The design of the Polo Agribusiness of Borgorose, provides a growing trend in employment in proportion to the passing of the years (also with reference to the various investment hypothesized in time), with a positive implication on the social fabric of the area that is deficient in this respect (as indeed the whole province), as is clear from the latest surveys Tagliacarne Institute in collaboration with the Chamber of Commerce of Rieti.

Table 10: Growth dynamic in the site location

Simulation of the growth of companies present within the Pole					
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Typology A	5	13	20	24	25
Typology B	3	6	9	11	12
Typology C	2	3	5	6	6
Total	10	22	34	41	43

Table 11: Employed dynamic

Employed by single company type					
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Typology A	5	6	7	8	10
Typology B	9	9	11	12	14
Typology C	12	13	14	15	16
Total	**76**	**171**	**309**	**414**	**514**

From a financial point of view the investments planned for the birth of the Polo as a whole, were split into investments in land and buildings and plant and equipment in order to highlight possible implications in terms of induced:

Table 12: Main indicators in the master plan

Total Hub Agribusiness					
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Number of companies	10	22	34	41	43
Employed	76	171	309	414	514
Global revenue	24.700.000	54.650.000	95.500.000	128.700.000	147.400.000
Totale investments for:	31.626.000	31.405.000	40.572.000	30.496.000	20.180.000
- land and buildings	22.230.000	21.060.000	24.570.000	14.040.000	3.510.000
- facilities and equipment	9.396.000	10.345.000	16.002.000	16.456.000	16.670.000
Impact on GDP	0,77	1,71	2,98	4,02	4,61

As for public infrastructure, were instead estimated the size and cost of all major infrastructure needed to support the business activities, with the real possibility that we can establish an infrastructure fund made available to the Industrial Consortium of Rieti / Lazio region to cover almost all the charges required:

Table 13: Main infrastructures for Site location

Infrastructure need for Hub Agribusiness		
Total area	Ha	70
Internal roads	Ml	7.400
Parking spaces	Mq	39.800
Levelling	Mc	396.000
Area services	Ha	8
Minimum size properties	Mq	750
Mazimum size properties	Mq	3000
Total property size	Ha	23,3

Table 14: Main Financial information for site location

Financial Information			
Public funds in €:			17.597.681,90
Internal roads	ml	7.400	4.490.181,74
Parking spaces	mq	39.800	1.330.715,5
Levelling	mc	396.000	1.268.608,41
Area service	ha	8	4.077.669,9
Unforeseen	euro		558.358,78
General costs for the infrastructure design	euro		1.407.064,12
Feasibility study / territorial marketing	euro		919.281,88
IVA	20%		2.626.519,69

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